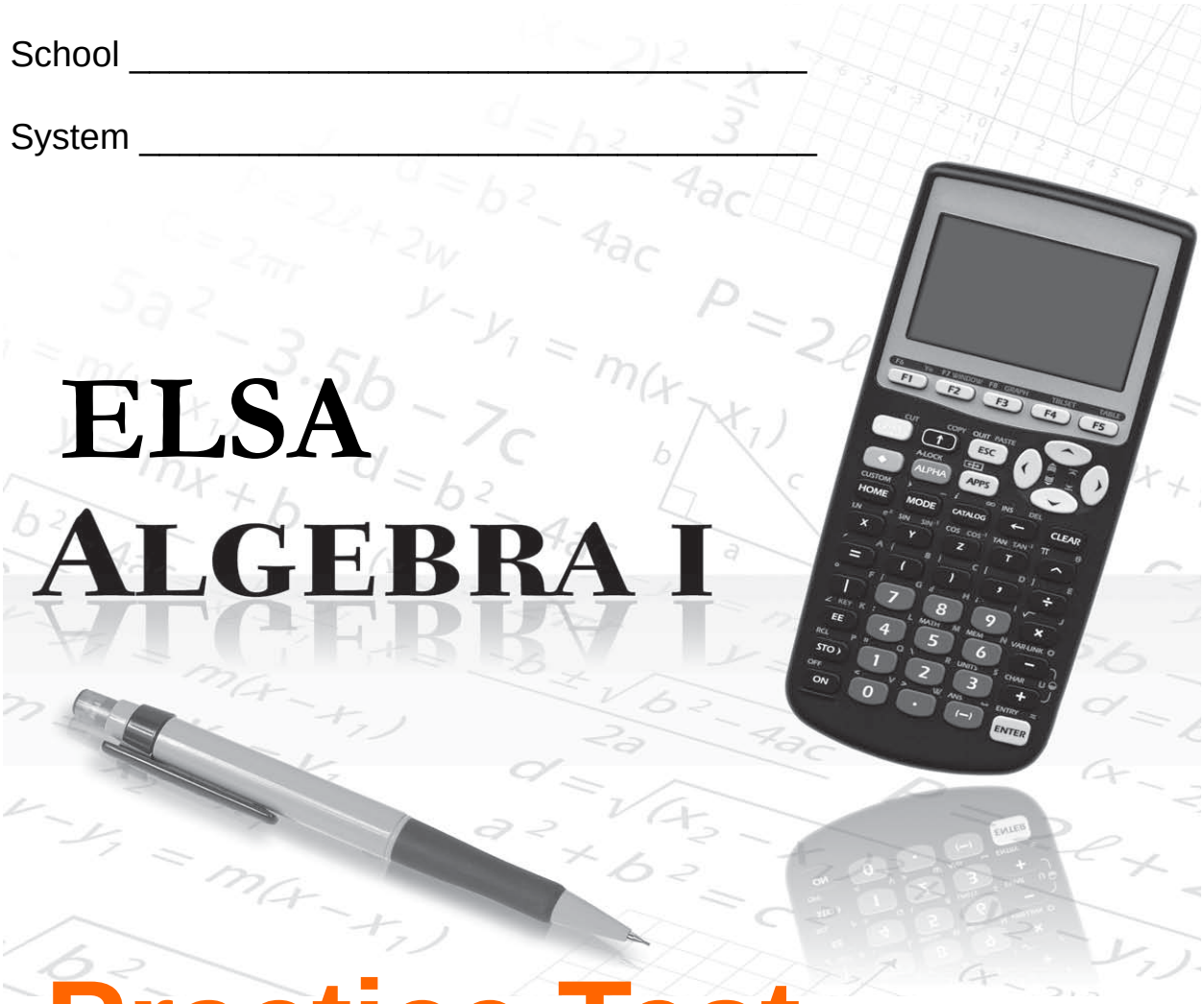
Student Name _____

Teacher Name _____

School _____

System _____



ELSA ALGEBRA I

Practice Test

Tennessee End of Course Assessment

ELSA Algebra I
Form 1

PEARSON

Developed and published under contract with State of Tennessee Department of Education by the Educational Measurement group of Pearson, a business of NCS Pearson, Inc., 2510 North Dodge Street, Iowa City, Iowa 52245.

Algebra I Reference Page

Abbreviations for Geometric Formulas

A = area	d = diameter	r = radius
B = area of base	h = height	s = length of side
b = base	ℓ = length	V = volume
C = circumference	P = perimeter	w = width

Perimeter (P) and Circumference (C)

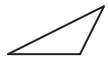
Any Polygon: P = sum of side lengths

Rectangle: $P = 2\ell + 2w$

Circle: $C = 2\pi r$ or πd

$\pi \approx 3.14$ or $\frac{22}{7}$

Plane Figures — Area (A)

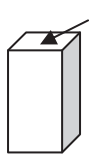
Triangle:  $A = \frac{1}{2}bh$

Rectangle:  $A = \ell w$

Circle:  $A = \pi r^2$

$\pi \approx 3.14$ or $\frac{22}{7}$

Solid Figures — Volume (V)

Right Rectangular Prism: 

$V = Bh$ or $V = \ell wh$

Cube:  $V = s^3$

Algebraic Formulas and Equations

$d = rt$ — distance = rate × time

Distance Formula: $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

d = distance between two points

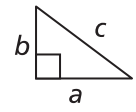
Midpoint Formula: $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$

Slope Formula: $m = \frac{y_2 - y_1}{x_2 - x_1}$

Standard Form of a Linear Equation: $Ax + By = C$

Slope-Intercept Equation: $y = mx + b$

Point-Slope Equation: $y - y_1 = m(x - x_1)$

Pythagorean Theorem: $a^2 + b^2 = c^2$ 

Quadratics

For $ax^2 + bx + c = 0$: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Discriminant: $b^2 - 4ac$

Measurement Conversions

LENGTH

1 foot (ft) = 12 inches (in.)
1 yard (yd) = 3 feet
1 yard = 36 inches
1 mile = 1,760 yards
1 mile = 5,280 feet

CAPACITY

1 cup (c) = 8 fluid ounces (fl oz)
1 pint (pt) = 2 cups
1 quart (qt) = 2 pints
1 quart = 4 cups
1 gallon (gal) = 4 quarts

WEIGHT

1 pound (lb) = 16 ounces (oz)
1 ton (T) = 2,000 pounds

CONVERSION BETWEEN CUSTOMARY AND METRIC MEASUREMENT

1 yard = 0.9144 m
1 foot = 0.3048 m
1 inch = 2.54 cm
1 quart = 0.946 L
1 ounce = 28.35 g
1 lb = 0.45 kg

Contents

Introduction to ELSA Algebra I

TCAP English Linguistically Simplified Assessment (ELSA)

The End of Course English Linguistically Simplified Assessment (ELSA) is the End of course Assessment in "simplified" English. It is a multiple-choice test designed to measure student achievement in certain skills in two content areas: Algebra I and English II. The questions in this Practice Test are examples of items used in the actual test.

ELSA test questions

Questions are written to test student performance in state content standards. The State Content Standards and Performance Indicators were developed by the Tennessee Department of Education. These Standards and Performance Indicators are listed on the State Department of Education Web site at http://www.state.tn.us/education/curriculum.shtml.

Test accommodations

The End of Course English Linguistically Simplified Assessment may be administered using various procedures that are used during the student's daily educational program. Certain conditions must be met for students to be eligible for Special and English Learner (EL) accommodations.

Content of End of Course tests

The testing program titled the Tennessee End of Course Assessment was established to meet the Tennessee mandate for end of course assessments in Tennessee secondary schools. These tests measure the Tennessee State Performance Indicators. Subject areas covered by the end of course assessments include Mathematics, Language Arts, History, and Science.

Test development

For the *Tennessee End of Course Assessment,* professional item writers experienced in each of the content areas researched and wrote the items. Professional editors and test developers carefully reviewed all items and test directions for content and accuracy. To provide a large pool of items for final test selection, the test developers created approximately 50% more items as were needed in the final editions of the tests.

After items were field tested, student responses were analyzed. Professional content editors and researchers carefully reviewed items, their data, and test directions for content, suitability, and accuracy before including certain items and test directions in operational tests.

Test administration

Tennessee End of Course Assessments are given to students as they are completing courses that are included in the program. Tests may be given midyear for block schedules or at the end of the school year.

This test contains 65 multiple-choice questions.

You will have ample time to read each of the questions. The ELSA Algebra I test has been designed to be administered in one session and is not timed. The first 15 minutes are set aside to complete identifying data on the answer sheet.

A reference page, similar to the one located in this Practice Test, will be in the front of the actual test. This page includes a list of formulas, equations, and tables for use during testing.

Calculator use is optional. Sharing calculators during testing is not permitted.

The following types of calculators/devices may **NOT** be used during the test:

- pocket organizers
- electronic writing pads or input devices
- Some examples of prohibited calculators are:
    - Casio models: CFX-9970G, Algebra FX 2.0
    - Hewlett-Packard models: HP-40G, HP-49G
    - Texas Instruments models: TI-89, TI-92, Voyage 200, TI-NSPIRE – the CAS version (The non-CAS version of TI-NSPIRE is allowable.)
- calculators that can communicate (transfer data or information) wirelessly with other student calculators/devices
- cell phones, PSPs, and/or iPods
- Students may use any four-function, scientific, or graphing calculator does not have any of the above features. The use of units that have a Computer Algebra System (CAS) is NOT allowed.

Tips for Taking the Test

Preparing for the test

- Take this Practice Test several times
- Review the Tennessee ELSA End of Course Item Sampler for Algebra I located at http://tennessee.gov/education/assessment/sec_samplers.shtml on the Tennessee Department of Education Web site.
- Become familiar with the correct way to mark answers on the answer sheet. There is a sample answer sheet in this Practice Test.

Before the test

- Get a good night's sleep. To do your best, you need to be rested.

During the test

- Relax. It is normal to be somewhat nervous before the test. Try to relax and not worry.
- Listen. Listen to and read the test directions carefully. Ask for an explanation of the directions if you do not understand them.
- Plan your time. Do not spend too much time on any one question. If a question seems to take too long, skip it and return to it later. First answer all questions that you are sure about.
- Think. If you are not sure how to answer a question, read it again and try your best to answer the question. Rule out answer choices that you know are incorrect and choose from those that remain.

Answer Sheet for the Practice Test

1 Ⓐ Ⓑ Ⓒ Ⓓ	14 Ⓐ Ⓑ Ⓒ Ⓓ	27 Ⓐ Ⓑ Ⓒ Ⓓ	40 Ⓐ Ⓑ Ⓒ Ⓓ	53 Ⓐ Ⓑ Ⓒ Ⓓ
2 Ⓐ Ⓑ Ⓒ Ⓓ	15 Ⓐ Ⓑ Ⓒ Ⓓ	28 Ⓐ Ⓑ Ⓒ Ⓓ	41 Ⓐ Ⓑ Ⓒ Ⓓ	54 Ⓐ Ⓑ Ⓒ Ⓓ
3 Ⓐ Ⓑ Ⓒ Ⓓ	16 Ⓐ Ⓑ Ⓒ Ⓓ	29 Ⓐ Ⓑ Ⓒ Ⓓ	42 Ⓐ Ⓑ Ⓒ Ⓓ	55 Ⓐ Ⓑ Ⓒ Ⓓ
4 Ⓐ Ⓑ Ⓒ Ⓓ	17 Ⓐ Ⓑ Ⓒ Ⓓ	30 Ⓐ Ⓑ Ⓒ Ⓓ	43 Ⓐ Ⓑ Ⓒ Ⓓ	56 Ⓐ Ⓑ Ⓒ Ⓓ
5 Ⓐ Ⓑ Ⓒ Ⓓ	18 Ⓐ Ⓑ Ⓒ Ⓓ	31 Ⓐ Ⓑ Ⓒ Ⓓ	44 Ⓐ Ⓑ Ⓒ Ⓓ	57 Ⓐ Ⓑ Ⓒ Ⓓ
6 Ⓐ Ⓑ Ⓒ Ⓓ	19 Ⓐ Ⓑ Ⓒ Ⓓ	32 Ⓐ Ⓑ Ⓒ Ⓓ	45 Ⓐ Ⓑ Ⓒ Ⓓ	58 Ⓐ Ⓑ Ⓒ Ⓓ
7 Ⓐ Ⓑ Ⓒ Ⓓ	20 Ⓐ Ⓑ Ⓒ Ⓓ	33 Ⓐ Ⓑ Ⓒ Ⓓ	46 Ⓐ Ⓑ Ⓒ Ⓓ	59 Ⓐ Ⓑ Ⓒ Ⓓ
8 Ⓐ Ⓑ Ⓒ Ⓓ	21 Ⓐ Ⓑ Ⓒ Ⓓ	34 Ⓐ Ⓑ Ⓒ Ⓓ	47 Ⓐ Ⓑ Ⓒ Ⓓ	60 Ⓐ Ⓑ Ⓒ Ⓓ
9 Ⓐ Ⓑ Ⓒ Ⓓ	22 Ⓐ Ⓑ Ⓒ Ⓓ	35 Ⓐ Ⓑ Ⓒ Ⓓ	48 Ⓐ Ⓑ Ⓒ Ⓓ	61 Ⓐ Ⓑ Ⓒ Ⓓ
10 Ⓐ Ⓑ Ⓒ Ⓓ	23 Ⓐ Ⓑ Ⓒ Ⓓ	36 Ⓐ Ⓑ Ⓒ Ⓓ	49 Ⓐ Ⓑ Ⓒ Ⓓ	62 Ⓐ Ⓑ Ⓒ Ⓓ
11 Ⓐ Ⓑ Ⓒ Ⓓ	24 Ⓐ Ⓑ Ⓒ Ⓓ	37 Ⓐ Ⓑ Ⓒ Ⓓ	50 Ⓐ Ⓑ Ⓒ Ⓓ	63 Ⓐ Ⓑ Ⓒ Ⓓ
12 Ⓐ Ⓑ Ⓒ Ⓓ	25 Ⓐ Ⓑ Ⓒ Ⓓ	38 Ⓐ Ⓑ Ⓒ Ⓓ	51 Ⓐ Ⓑ Ⓒ Ⓓ	64 Ⓐ Ⓑ Ⓒ Ⓓ
13 Ⓐ Ⓑ Ⓒ Ⓓ	26 Ⓐ Ⓑ Ⓒ Ⓓ	39 Ⓐ Ⓑ Ⓒ Ⓓ	52 Ⓐ Ⓑ Ⓒ Ⓓ	65 Ⓐ Ⓑ Ⓒ Ⓓ

Directions for Taking the Practice Test

In this Practice Test, you will answer various mathematical operations. You may use your calculator and Reference Page located in the front of this book to help you solve the problems. You may write in the open spaces in this book to work the problems, but remember to fill in the circle on your answer sheet that goes with the answer you choose for each question. Fill in the circle completely and make your mark heavy and dark. If you want to change an answer, erase the mark you made and make a new mark.

You will do the items in this Practice Test by yourself. Remember to read all the directions carefully. When you have finished, you may check for answers.

On your answer sheet, find Number 1. Mark your answers beginning with Number 1.

You may begin.

Stop when you have finished the test.

At the end of the Practice Test, make sure that all your marks are heavy and dark and that you have completely erased any marks that you do not want.

Turn to 75 and locate the Answer Key. Check your answers and review those items that you marked incorrectly.

1. **Add:** $(3x^2 + 4x - 1) + (-2x^2 - x + 3)$

A $x^2 + 3x - 4$

B $x^2 + 3x + 2$

C $5x^2 + 4x + 2$

D $5x^2 + 5x + 4$

2. **The stem-and-leaf plot below shows the heights of 9 people.**

Heights of People

3	10 11
4	1 4 4 7
5	2 7 8

KEY
3|10 means 3 feet 10 inches

Which could be the height of the 10th person who would be considered an outlier?

A 6 feet 10 inches

B 5 feet 8 inches

C 4 feet 4 inches

D 3 feet 10 inches

3. **Which number completes this equation correctly?**

18 cubic yards = _____ cubic feet

A 54

B 162

C 486

D 5,832

4. Factor: $4x^2 - 4x - 3$

A $(4x - 3)(x + 1)$

B $(2x - 3)(2x + 1)$

C $(2x - 1)(2x + 3)$

D $(x - 1)(4x + 3)$

5. **A bike rental company charges $6 for the first hour and $5 for each additional hour. Which equation can be used to determine *y*, the total cost of renting a bike for *x* hours?**

A $y = 5x + 1$

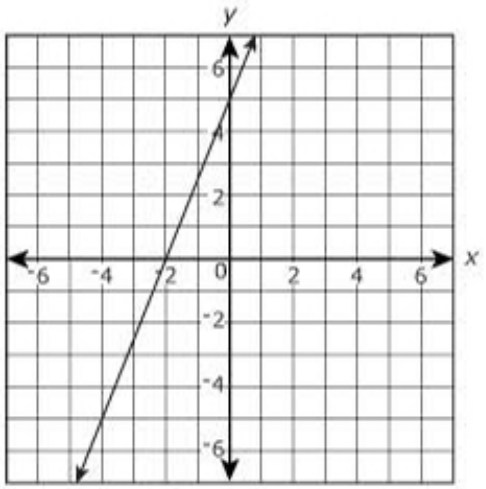
B $y = 5x + 5$

C $y = 6x - 1$

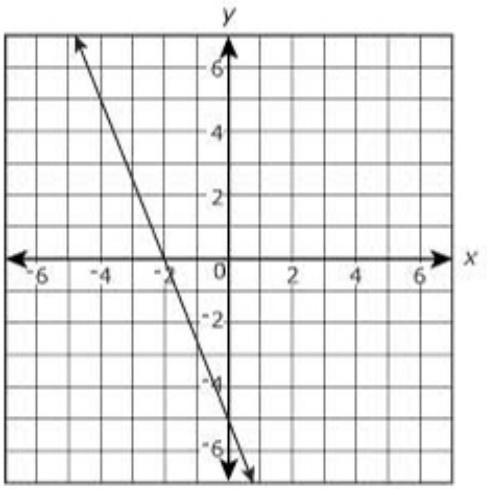
D $y = 6x + 5$

6. Which graph best represents the equation $x - 0.4y = 2$?

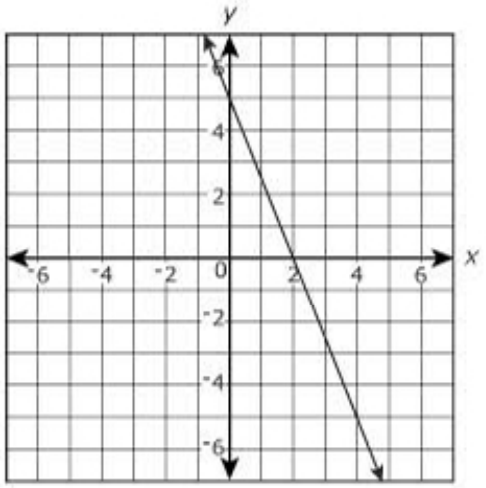
A



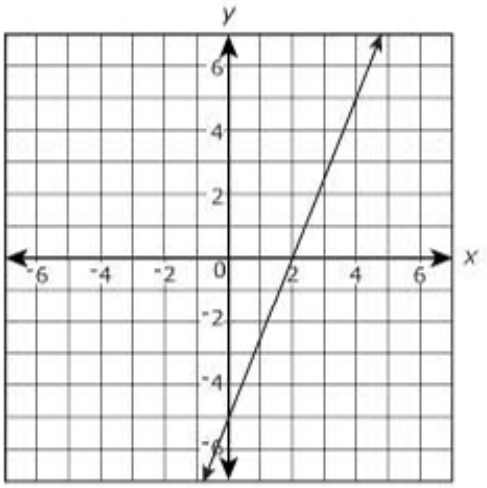
C



B



D



7. **The mass of the Moon is about 7.349×10^{22} kilograms and the mass of the Sun is about 1.989×10^{30} kilograms. Approximately how many times greater is the mass of the Sun than the mass of the Moon?**

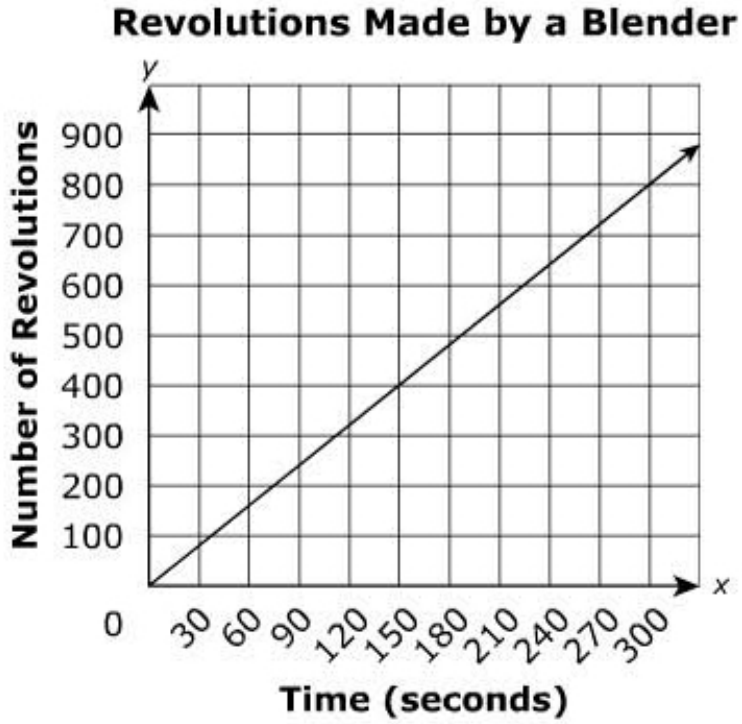
A 1.461×10^{53}

B 1.461×10^{54}

C 2.706×10^{7}

D 2.706×10^{8}

The graph below shows the number of revolutions over time, in seconds, made by a blender.



8. **What is the rotational speed of the blender in revolutions per minute (rpm)?**

A 80 rpm

B 160 rpm

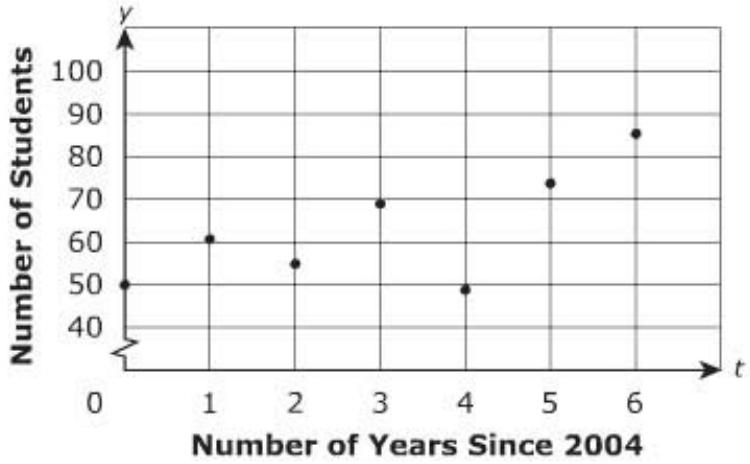
C 250 rpm

D 375 rpm

9. **A relationship between *t*, the number of years since 2004, and *y*, the number of students on the team, is shown in the table and graph below.**

Number of Students on the Team

Number of Years Since 2004, *t*	Number of Students, *y*
0	50
1	61
2	55
3	69
4	49
5	74
6	86



Using the line of best fit, which is the best prediction for the number of students on the team in 2012?

A 122

B 105

C 98

D 86

10. **The main entrance of a garden is in the shape of an arch. The height, *h*, in feet, of the entrance *x* feet from the left end of the base of the arch is represented by the function below.**

$$h(x) = -\frac{1}{5}x^2 + 3x$$

What is the height of the entrance at a distance of 5.5 feet from the left end of the base?

A 10.45 feet

B 15.4 feet

C 17.6 feet

D 22.55 feet

11. **Kris and Saul buy a bookcase for $70, a book for $20, and a DVD shelf for $5. To find the total cost, Kris writes ($70 + $20) + $5 and Saul writes $70 + ($20 + $5). Which property shows that these expressions are equivalent?**

A distributive property

B associative property

C commutative property

D addition property of equality

12. Solve: $\frac{2}{3}x - 5 = 7$

- **A** $x = 3$
- **B** $x = 8$
- **C** $x = 11$
- **D** $x = 18$

13. **What happens to the graph of $y = 3x - 7$ when the equation of the line becomes $y = 15x - 7$?**

A The line is moved to the right by 5 units.

B The line is moved to the left by 5 units.

C The line is 5 times as steep.

D The line is $\frac{1}{5}$ as steep.

14. Which expression is equivalent to $\frac{2x^2-17x-30}{3x^2-28x-20}$?

A $\frac{2x-3}{3x-2}$

B $\frac{2x+3}{3x+2}$

C $\frac{2x-15}{3x-10}$

D $\frac{2x+15}{3x+10}$

The table below shows the annual salary of six employees.

Annual Salary of Six Employees

Employee	Salary (in dollars)
Marco	57,000
Linda	50,000
Sharon	56,600
Pamela	58,000
Sarah	57,500
Laura	51,200

15. **Sharon and Pamela each get a $5,000 pay raise. The rest of the employees each get a $6,000 pay raise. Which statement is true about the median of the annual salaries of all the employees?**

A The median increases by $5,000.

B The median increases by $5,500.

C The median increases by $5,667.

D The median increases by $6,000.

16. **Mr. Romero buys a package of 12 cartons of tomato soup for $30. If each carton holds 16 ounces of soup, what is the cost per quart?**

A $1.25

B $2.50

C $5.00

D $7.50

17. **The table below shows the total amount of water that poured out from a pipe.**

Total Amount of Water Discharged

Time (minutes)	Amount of Water (gallons)
5	85
9	153
13	221
17	289

What is the discharge rate in gallons per minute?

A 7.6 gallons per minute

B 12 gallons per minute

C 13.6 gallons per minute

D 17 gallons per minute

18. **Which list of numbers is ordered from greatest to least?**

A $3.199, \sqrt{15}, \frac{16}{5}, \frac{47}{15}$

B $\frac{47}{15}, 3.199, \frac{16}{5}, \sqrt{15}$

C $\sqrt{15}, \frac{16}{5}, 3.199, \frac{47}{15}$

D $\frac{47}{15}, \sqrt{15}, \frac{16}{5}, 3.199$

19. **Which function represents the data shown in the table below?**

x	$f(x)$
2	2
4	−4
6	−10
8	−16

A $f(x) = -3x + 8$

B $f(x) = -3x - 8$

C $f(x) = 3x + 8$

D $f(x) = 3x - 8$

20. **Which transformation occurs to the graph of $y = 2x + 5$ when the equation of the line changes to $y = 2x + 9$?**

A The line is shifted to the right 4 units.

B The line is shifted to the left 4 units.

C The line is shifted down 4 units.

D The line is shifted up 4 units.

21. **Simplify $\frac{4x^2-12x+9}{2x^2-x-3}$ and state all restrictions on the domain of this expression.**

A $\frac{2x-3}{x+1}$; $x \neq -1$

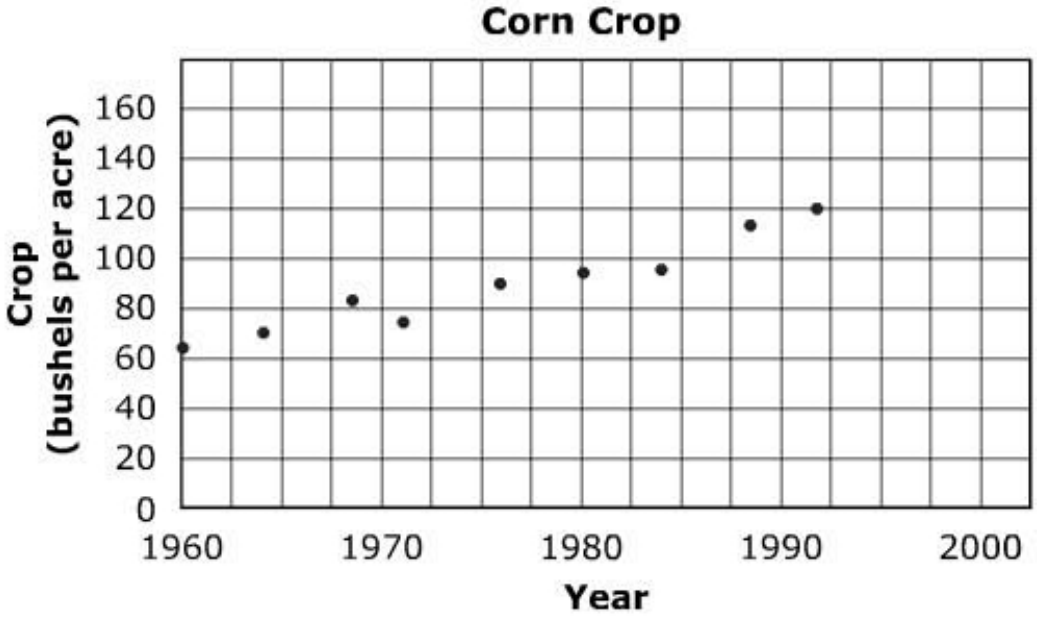
B $\frac{2x+3}{x-1}$; $x \neq 1$

C $\frac{2x+3}{x-1}$; $x \neq -\frac{3}{2}$ and $x \neq 1$

D $\frac{2x-3}{x+1}$; $x \neq -1$ and $x \neq \frac{3}{2}$

22. **The table and graph below show the relationship between corn crops, in bushels per acre, and various years since 1960.**

Year	Crop (bushels per acre)
1960	63
1964	71
1968	83
1972	75
1976	90
1980	94
1984	96
1988	114
1992	120



Using the line of best fit, what was the likely corn crop, in bushels per acre, for the year 2000?

A 120

B 130

C 150

D 160

23. What is the value of the expression $\frac{x^3y^2}{6} + x^2y^2$ when $x = -2$ and $y = 3$?

A −45

B −30

C 24

D 27

24. The equation $F = \frac{9}{5}C + 32$ represents the relationship between temperature in degrees Celsius, °*C*, and degrees Fahrenheit, °*F*. Which table shows this relationship?

A

Temperatures

Temperature (in °C)	Temperature (in °F)
20	36
30	54
40	72
50	90

C

Temperatures

Temperature (in °C)	Temperature (in °F)
20	4
30	22
40	40
50	58

B

Temperatures

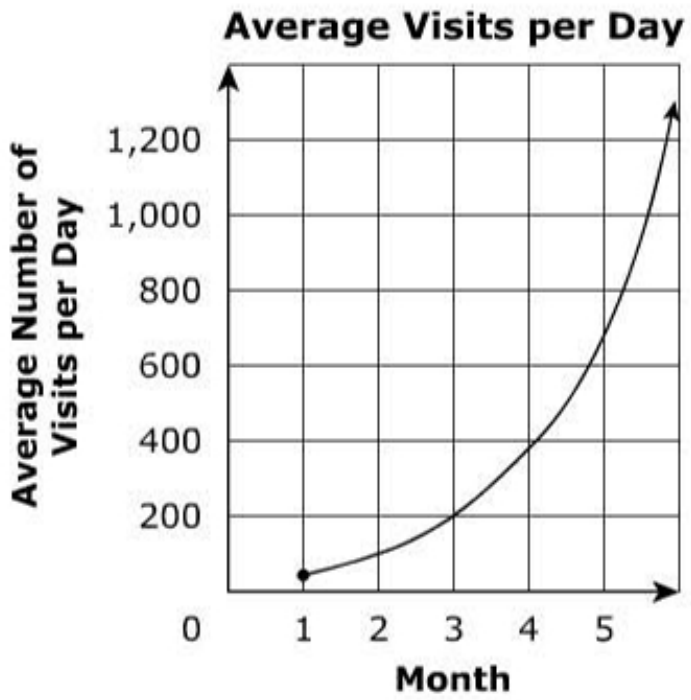
Temperature (in °C)	Temperature (in °F)
20	43
30	49
40	54
50	60

D

Temperatures

Temperature (in °C)	Temperature (in °F)
20	68
30	86
40	104
50	122

The graph below shows the relationship between the average number of visits per day to a particular Web site and time, in months.



25. **To the nearest hundred visits, what is the difference in the average number of Web site visits per day from the second month to the fifth month?**

A 100

B 500

C 600

D 700

26. **Which ordered pair, (x, y), represents the solution for the system of equations?**

$$3.5x + 0.5y = 7$$
$$x - y = 10$$

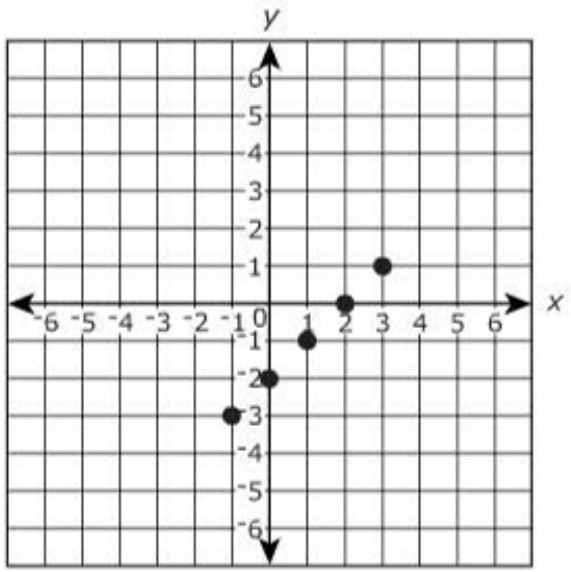
A $(-7, 3)$

B $(7, 3)$

C $(3, -7)$

D $(3, 7)$

27. **Which is an equivalent representation for the relation below?**



A $\{(-1, -1), (0, 2), (1, 1), (2, 1), (3, 1)\}$

B $\{(-3, -1), (-2, 0), (-1, 1), (0, 2), (1, 3)\}$

C $\{(x, y)$ such that $y = x + 2$ for all integers x: $-1 \leq x \leq 3\}$

D $\{(x, y)$ such that $y = x - 2$ for all integers x: $-1 \leq x \leq 3\}$

28. Simplify: $\frac{\sqrt{576x^5y^4}}{6x^2y^2}$ for all $x > 0$ and $y > 0$

A 4

B $4\sqrt{x}$

C $\frac{4\sqrt{xy}}{y}$

D $4xy\sqrt{6x}$

29. **Which scenario can be best represented by the equation $y = 100x + 500$?**

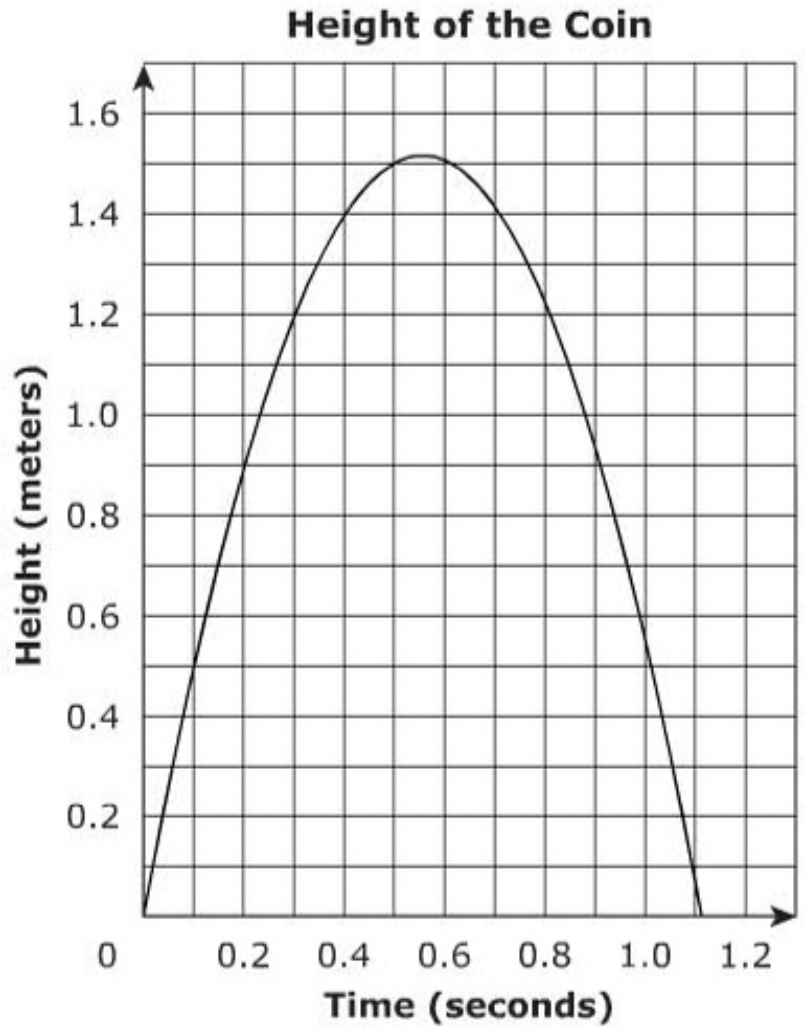
A the profit made by selling x rings at \$100 each after selling 500 rings

B the loan balance after a \$100 down payment and a monthly payment of \$500 for x months

C the volume of water in a 500-gallon tank after x minutes if the beginning volume of water is 100 gallons

D the amount in a bank account with a beginning deposit of \$500 and a monthly deposit of \$100 for x months

Andy throws a coin up in the air. The height of the coin, in meters, with respect to time, in seconds, is represented by the quadratic function below.



30. **Which is closest to the height of the coin at 0.3 second?**

A 0.5 meter

B 0.9 meter

C 1.2 meters

D 1.5 meters

31. **The table below shows $f(n)$, the cost, including delivery, for ordering n number of chocolate bars from a candy maker.**

Cost of Chocolate Bars

Number of Chocolate Bars, n	Cost, $f(n)$
12	$44
14	$50
16	$56
18	$62

Which function best describes the data?

A $f(n) = 3n$

B $f(n) = 3n + 3$

C $f(n) = 3n + 6$

D $f(n) = 3n + 8$

32. **The mean price of tickets for a concert is $31.50. If the price of each ticket is reduced by $2.00, what is the new mean?**

- ○ **A** $33.50
- ○ **B** $31.50
- ◉ **C** $29.50
- ○ **D** $15.75

33. **Which set of ordered pairs represents a relation that is <u>not</u> a function?**

A $\{(-1, -12), (-1, -8), (-1, -4), (-1, 0)\}$

B $\left\{\left(-\frac{1}{5}, -\frac{1}{25}\right), \left(-\frac{2}{7}, -\frac{4}{49}\right), \left(-\frac{1}{3}, -\frac{1}{9}\right), \left(-\frac{3}{16}, -\frac{9}{256}\right)\right\}$

C $\{(-5, 12), (-8, 12), (10, 12), (13, 12)\}$

D $\left\{(-7, -5), \left(-\frac{1}{2}, \frac{3}{2}\right), (0, 2), \left(\frac{3}{4}, \frac{11}{4}\right)\right\}$

34. **The table below shows the cost in dollars, *c*, for different maximum package weights, *w*, in pounds, charged by a delivery service.**

Cost for Package Weights

Maximum Weight, *w* (in pounds)	Cost, *c* (in dollars)
5	38
20	113
35	188
50	263

Which equation represents the relationship between the cost and the maximum weight?

A $c = \frac{1}{5}w$

B $c = 5w$

C $c = \frac{1}{5}w + 37$

D $c = 5w + 13$

35. Which rational number lies between $\sqrt{10}$ and $\sqrt{12}$?

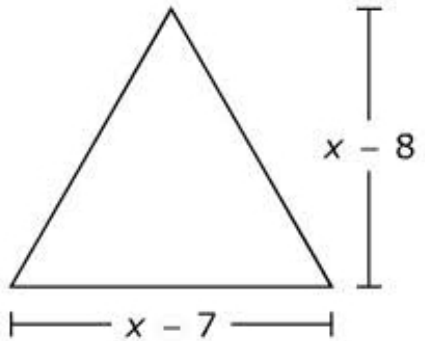
A $\frac{45}{14}$

B $\frac{47}{13}$

C $\frac{47}{19}$

D $\frac{52}{17}$

36. **The length of the base and height of a triangle are labeled below.**



$$A = \frac{1}{2}bh$$

Which expression represents the area of the triangle in terms of *x*?

A $\frac{1}{2}(x^2 - 56)$

B $\frac{1}{2}(x^2 + 56)$

C $\frac{1}{2}(x^2 - 15x - 56)$

D $\frac{1}{2}(x^2 - 15x + 56)$

37. **Simplify:** $6x(x + 3y) + 7y^2 - 2y(3x + y)$

A $6x^2 - 3xy + 8y^2$

B $6x^2 + 12xy + 5y^2$

C $6x + 12xy + 7y^2 - 2y$

D $6x + 24xy + 7y^2 + 2y$

38. **What are the coordinates of the midpoint of a line segment whose endpoints are (10, −5) and (−6, −3)?**

A (2, −4)

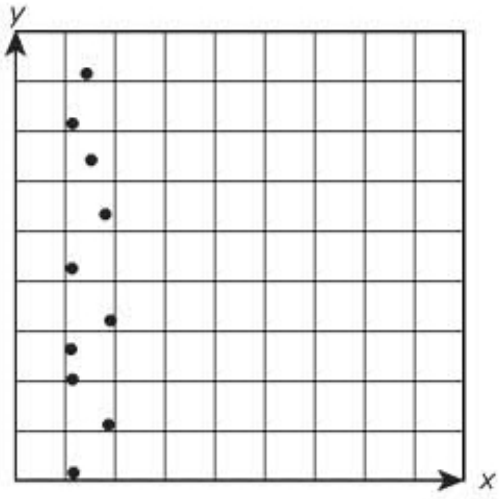
B (4, −8)

C (8, −1)

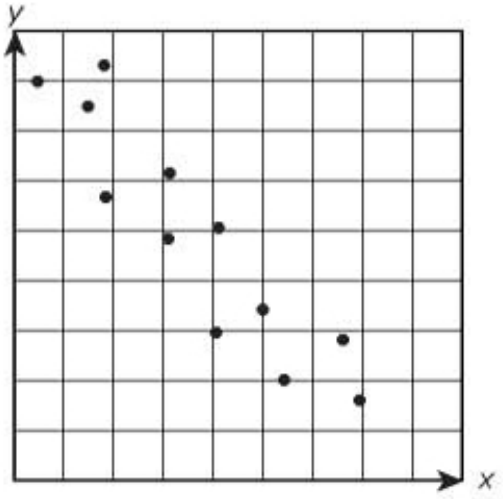
D (16, −2)

39. Which graph best shows a negative linear relationship between the variables *x* and *y*?

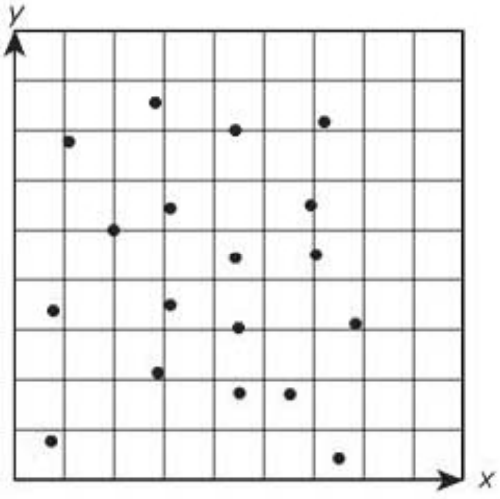
A



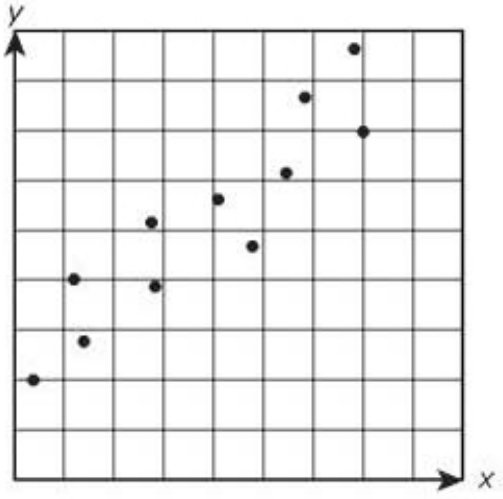
C



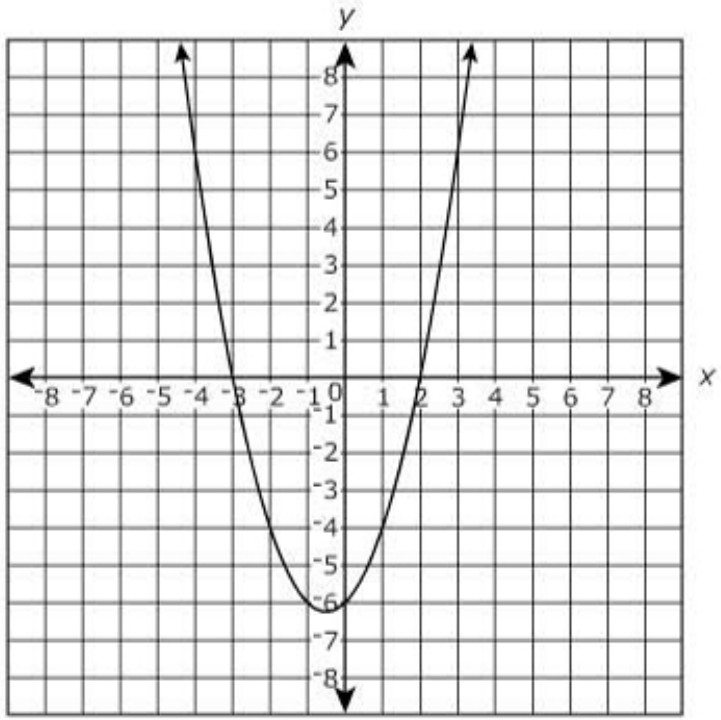
B



D



40. **What are the zeros of the quadratic function graphed below?**



A −6 and 0

B −3 and 2

C −2 and 3

D 0 and 6

41. **Carmen spins a spinner with equal-sized sections numbered from 1 through 20. What is the probability that the spinner lands on a multiple of 2?**

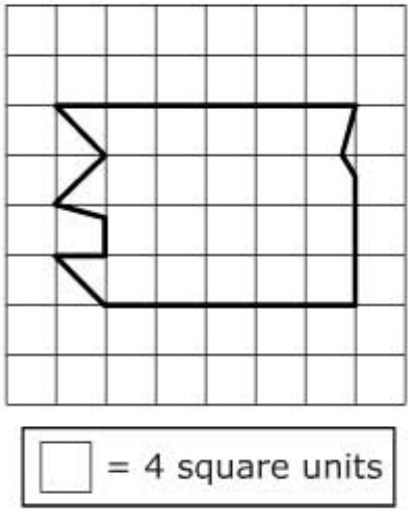
A $\frac{1}{2}$

B $\frac{9}{20}$

C $\frac{1}{10}$

D $\frac{1}{20}$

42. **Which is closest to the area of the figure?**



A 96 square units

B 86 square units

C 80 square units

D 72 square units

43. **The output of a small light is 2.0×10^{2} lumens. If 1 lumen is about 1.464×10^{-3} watts, then what is the output of the small light in watts?**

A 7.32×10^{-6}

B 7.32×10^{-5}

C 2.93×10^{-2}

D 2.93×10^{-1}

44. **Which values of x make the equation true?**

$$9x^2 + 54x - 243 = 0$$

A $x = -3$ and $x = -9$

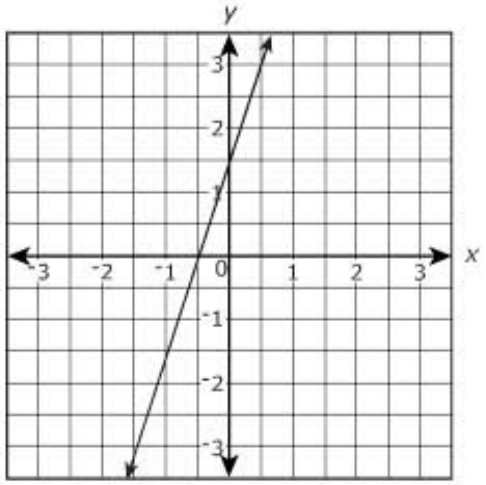
B $x = -3$ and $x = 9$

C $x = 3$ and $x = -9$

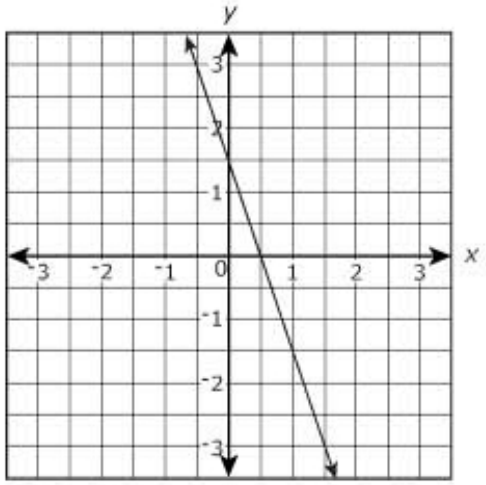
D $x = 3$ and $x = 9$

45. **Which graph <u>best</u> represents the equation $3x - y = -1.5$?**

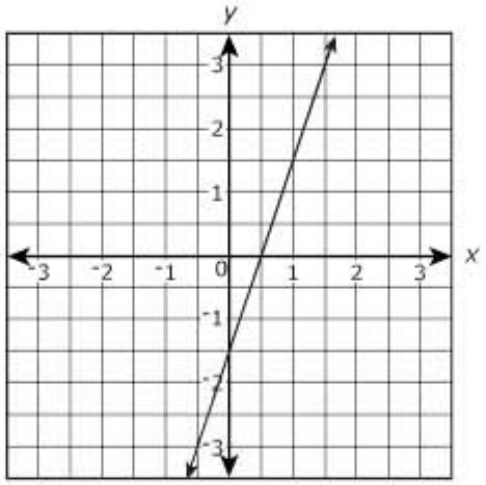
A



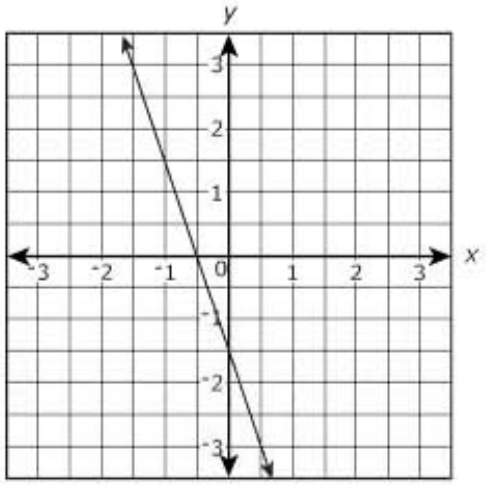
C



B



D



The download time of seven files is shown in the table below.

Download Time for Files

File Size (kilobytes)	Download Time (seconds)
150	6
250	8
348	10
715	17
759	18
950	22
880	20

46. Based on the data given in the table, which is a reasonable estimate of the download time of a 600-kilobyte file?

A 10 seconds

B 12 seconds

C 15 seconds

D 17 seconds

47. **Which expression is closest to $(2.5607 \times 10^{-23})^2$?**

A 6.557×10^{-46}

B 6.557×10^{-23}

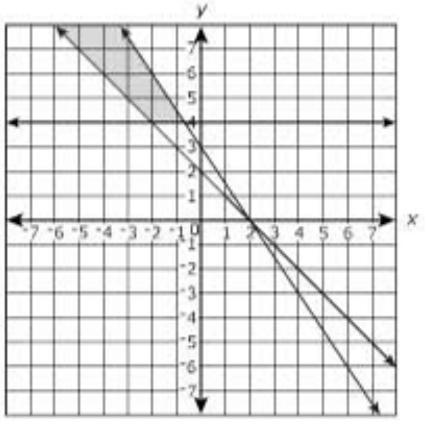
C 6.557×10^{-21}

D 6.557×10^{46}

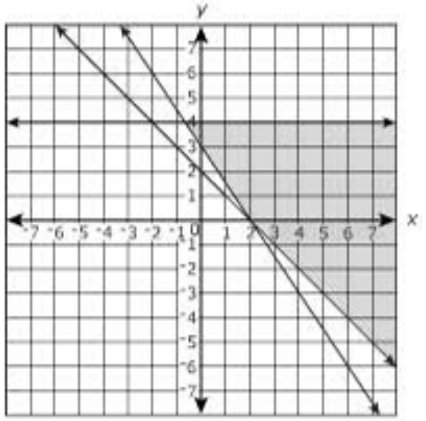
48. Which graph best represents the system of inequalities below?

$$y \leq 4$$
$$3x + 2y \leq 6$$
$$x + y \geq 2$$

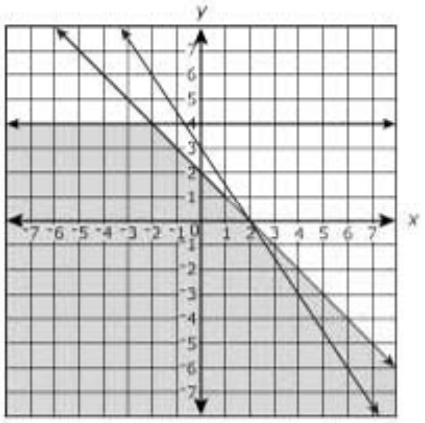
A



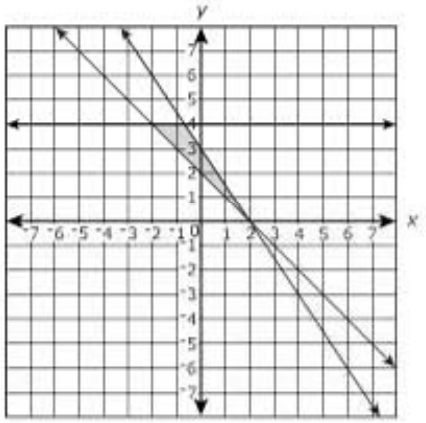
C



B



D



49. Solve: $24x - 10 \leq 46 \leq 34x - 14$

A $-\frac{7}{3} \leq x \leq \frac{30}{17}$

B $\frac{30}{17} \leq x \leq \frac{7}{3}$

C $-\frac{3}{2} \leq x \leq \frac{16}{17}$

D $\frac{16}{17} \leq x \leq \frac{3}{2}$

50. **The table below shows the scan speed of an antivirus software.**

Antivirus Scan Speed

Used Hard Drive Space (MB)	Time (seconds)
46	2
92	4
138	6
184	8

If the software continues to scan at the same rate, how long does it take to scan the used hard drive space of 437 megabytes (MB)?

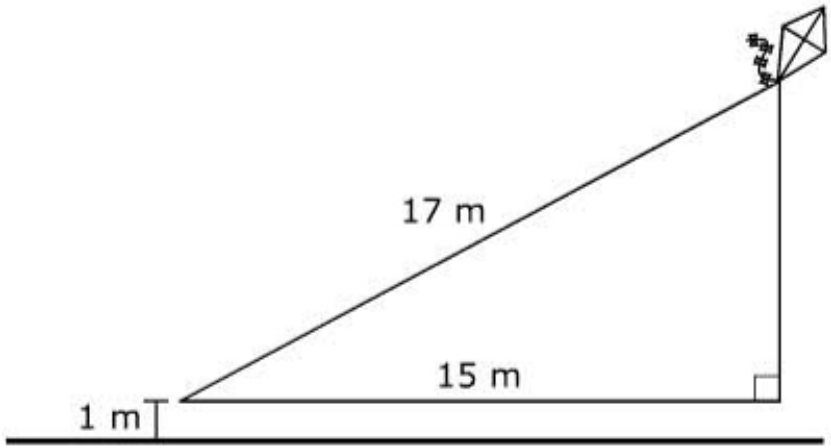
A 19 seconds

B 20 seconds

C 21 seconds

D 23 seconds

51. **Eva is flying a kite and is standing 15 meters away from the point directly below the kite. She holds the string 1 meter above the ground. The length of the released string is 17 meters.**



Note: Figure is not drawn to scale.

How high is the kite above the ground?

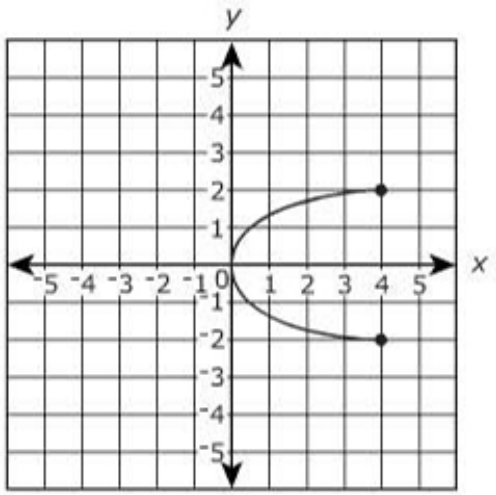
A 8 m

B 9 m

C 22.7 m

D 23.7 m

52. **State the domain and range of the relation graphed below.**



A domain: $0 \leq x \leq 2$ and range: $0 \leq y \leq 4$

B domain: $0 \leq x \leq 4$ and range: $0 \leq y \leq 2$

C domain: $0 \leq x \leq 4$ and range: $-2 \leq y \leq 2$

D domain: $-2 \leq x \leq 2$ and range: $0 \leq y \leq 4$

53. **If the value of the variables *x* and *y* are positive, what expression represents the sum of $7\sqrt{72x^4y^6}$ and $5\sqrt{2x^4y^6}$?**

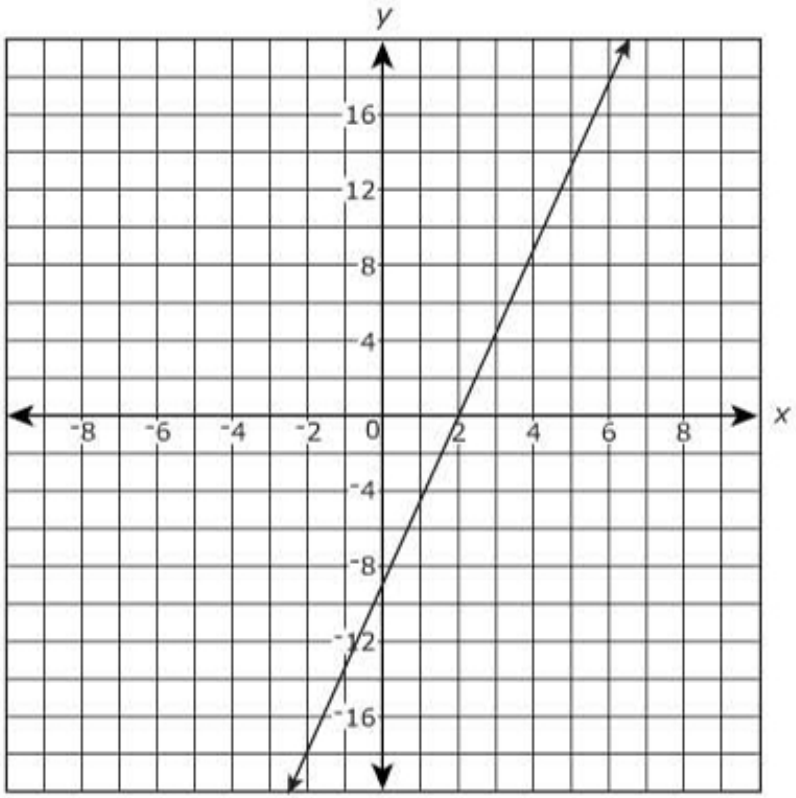
A $37\sqrt{2}x^2y^3$

B $47\sqrt{2}x^2y^3$

C $12\sqrt{74}x^2y^3$

D $94x^2y^3$

54. **Which equation best represents the graph of the line?**



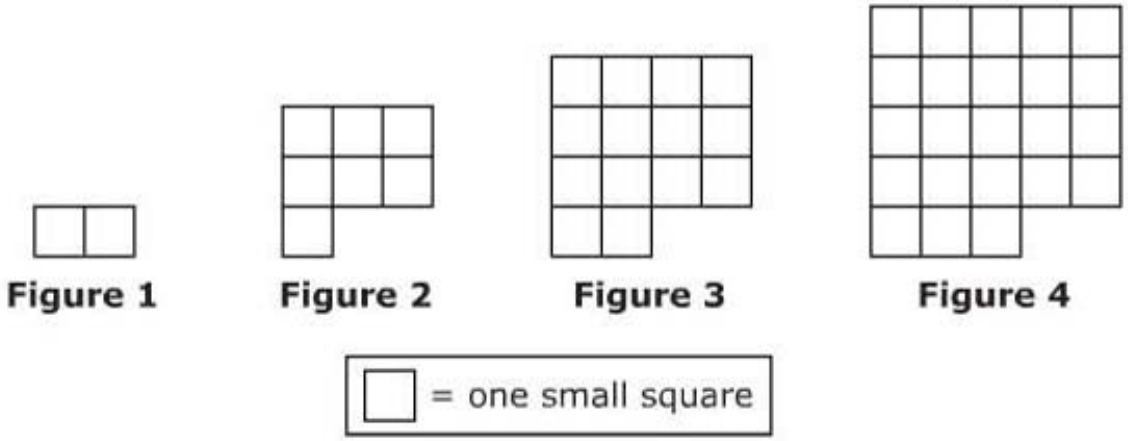
A $y = 4.5x + 9$

B $y = 4.5x - 9$

C $y = -4.5x - 9$

D $y = -4.5x + 9$

55. **The first four figures in a pattern are shown below.**



Which function, $f(n)$, represents the number of small squares in Figure n?

A $f(n) = 5n - 3$

B $f(n) = 7n - 7$

C $f(n) = (n - 1)^2 + 2$

D $f(n) = (n + 1)^2 - 2$

A karate instructor recorded attendance in his class each day in the table below.

Karate Class Attendance

Day	Number of Students
Monday	27
Tuesday	29
Wednesday	20
Thursday	18
Friday	23
Saturday	30
Sunday	31

56. **The instructor realized that Friday's attendance was actually 32. How will the range of the data change with the correct value for Friday's attendance?**

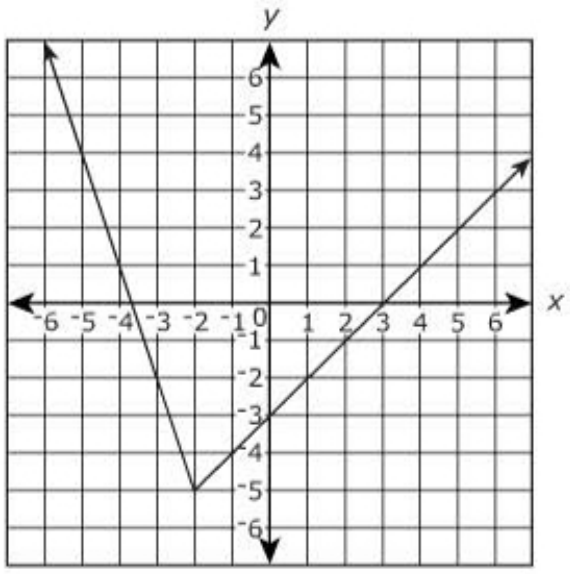
A The range will increase by 1.

B The range will increase by 2.

C The range will increase by 9.

D The range will remain unaffected.

57. **This graph represents a relation.**



Which set of ordered pairs is included in this relation?

A $\{(-5, 4), (-3, 2), (2, -1), (3, 0)\}$

B $\{(-4, 1), (-2, -5), (1, -2), (5, 2)\}$

C $\{(-3, -2), (0, 3), (1, -2), (4, 1)\}$

D $\{(-2, -5), (-1, 4), (2, -1), (3, 0)\}$

58. What is the simplified form of the expression $\frac{10x^2 - x - 65}{\sqrt[3]{(2x+5)^3}}$, if $x \neq -\frac{5}{2}$?

A $2x - 5$

B $2x + 5$

C $5x - 13$

D $5x + 13$

59. **Which function represents the pattern shown in the table?**

n	$f(n)$
1	9
2	36
3	144
4	576
5	2,304

A $f(n) = 9n^2$

B $f(n) = 9(4^n)$

C $f(n) = 4(9^{n-1})$

D $f(n) = 9(4^{n-1})$

60. Simplify $\frac{x^2-7x+12}{x+4} \cdot \frac{1}{3-x}$ completely for all values of x for which the expression is defined.

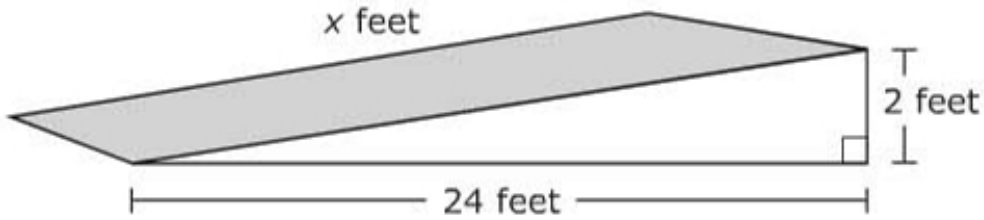
A -1

B 1

C $\frac{4-x}{4+x}$

D $\frac{x-4}{x+4}$

61. **Luis and Claudia construct a ramp as shown below.**



Note: Figure is not drawn to scale.

What is the closest value of *x*?

A 26

B 24.08

C 23.92

D 22

62. **Solve:** $-4x + 26 \geq 62$

A $x \leq -9$

B $x \geq -9$

C $x \leq -22$

D $x \geq -22$

63. What is the length of a segment whose endpoints are (8, −6) and (−4, 2)?

A $4\sqrt{13}$

B $4\sqrt{10}$

C $4\sqrt{5}$

D $4\sqrt{2}$

64. Which expression is an equivalent form of $\frac{8a^8b^7c^3}{44a^2b^{14}c^{12}}$ for all values of a, b, and c for which the expression is defined?

A $\frac{2a^4}{11b^2c^4}$

B $\frac{2a^6}{11b^7c^9}$

C $\frac{2a^6b^7c^9}{11}$

D $\frac{2a^{10}b^{21}c^{15}}{11}$

65. **At 11:05 A.M., an airplane flies at an altitude of 3,500 feet above the ground. At 11:10 A.M., the airplane descends to 1,000 feet. What is the aircraft's average rate of change in feet per minute?**

A −700 feet per minute

B −500 feet per minute

C 500 feet per minute

D 700 feet per minute

ELSA Algebra I Form 1
Answer Key

Item Number	Correct Answer
1	B
2	A
3	C
4	B
5	A
6	D
7	C
8	B
9	D
10	A
11	B
12	D
13	C
14	B
15	B
16	C
17	D
18	C
19	A
20	D
21	D
22	B

Item Number	Correct Answer
23	C
24	D
25	C
26	C
27	D
28	B
29	D
30	C
31	D
32	C
33	A
34	D
35	A
36	D
37	B
38	A
39	C
40	B
41	A
42	B
43	D
44	C

Item Number	Correct Answer
45	A
46	C
47	A
48	D
49	B
50	A
51	B
52	C
53	B
54	B
55	D
56	A
57	B
58	C
59	D
60	C
61	B
62	A
63	A
64	B
65	B

Reporting Categories

Below you will find that each item has been linked to its corresponding Reporting Category. These five Reporting Categories will be used to report scores from the actual test.

You can find the Reporting Categories and their Performance Indicators grouped together in the Tennessee ELSA End of Course Item Sampler for Algebra I located on the Tennessee Department of Education Web site at http://tennessee.gov/education/assessmentlsec_samplers.shtml.

Item	Reporting Category
1	3 - Algebra
2	5 - Data Analysis, Statistics, and Probability
3	4 - Geometry and Measurement
4	3 -Algebra
5	1 - Mathematical Processes
6	3 -Algebra
7	2 - Number and Operations
8	1 - Mathematical Processes
9	5 -Data Analysis, Statistics, and Probability
10	3 -Algebra
11	1 - Mathematical Processes
12	3 -Algebra
13	1 - Mathematical Processes
14	3 -Algebra
15	5- Data Analysis, Statistics, and Probability
16	4- Geometry and Measurement
17	1 - Mathematical Processes
18	2- Number and Operations
19	1 - Mathematical Processes
20	1 - Mathematical Processes
21	3 -Algebra
22	5- Data Analysis, Statistics, and Probability

Item	Reporting Category
23	1 - Mathematical Processes
24	1 - Mathematical Processes
25	3 -Algebra
26	3 -Algebra
27	3 -Algebra
28	2- Number and Operations
29	1 - Mathematical Processes
30	3 -Algebra
31	1 - Mathematical Processes
32	5- Data Analysis, Statistics, and Probability
33	3 -Algebra
34	1 - Mathematical Processes
35	2- Number and Operations
36	3 -Algebra
37	1 - Mathematical Processes
38	4- Geometry and Measurement
39	5- Data Analysis, Statistics, and Probability
40	3 -Algebra
41	5- Data Analysis, Statistics, and Probability
42	4- Geometry and Measurement
43	2- Number and Operations
44	3 -Algebra
45	3 -Algebra
46	5- Data Analysis, Statistics, and Probability
47	2- Number and Operations
48	3 -Algebra
49	3 -Algebra
50	1 - Mathematical Processes
51	4- Geometry and Measurement
52	3 -Algebra
53	2- Number and Operations

Item	Reporting Category
54	3 -Algebra
55	3 -Algebra
56	5- Data Analysis,Statistics, and Probability
57	3 -Algebra
58	2 - Number and Operations
59	3 -Algebra
60	3 -Algebra
61	4- Geometry and Measurement
62	3 -Algebra
63	4- Geometry and Measurement
64	3 -Algebra
65	1 - Mathematical Processes